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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
08/634.255	04/18/96	OHKUMA	N	35.C11365

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EXAMINER	
ANNICK.C	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 09/23/96

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.	Applicant(s)
08/634,255	Ohkuma et al.
Examiner	**Group Art Unit**
Christina Annick	2853

☒ Responsive to communication(s) filed on *Jul 6, 1999*.

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1, 2, and 4-15* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1, 2, and 4-15* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 USC 103

1 . The following is a quotation of 3 5 U. S. C. 103 (a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, and 4-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al. (U.S. 5,478,606) in view of Field et al. (U.S. 3,852,222). Ohkuma et al. discloses a liquid jet recording head which includes a member formed from a cured product of a resin composition comprising an epoxy and a photopolymerization initiator which acts to cure the epoxy (see column 5, lines 35-60). The resin composition which includes a compound which contains a functional group which reacts with the curable epoxy, as well as a fluorocarbon moiety, is subjected to cationic polymerization and (see column 5, lines 61-68 and column 6, lines 4-6). Note: Although the reference does not specifically disclose that this compound contains a reactive "functional group" this group is inherently disclosed since the reference does disclose that this compound "reacts" with the curable epoxy which in most cases involves a functional group (see column 6, lines 1-6). Tables I and 2 teach various concentrations of the compound having a functional group and fluorocarbon moiety. In addition, the compound which contains a fluorocarbon moiety (see column 6, line 6) contains fluorine at an amount of -30% which is well

within the range specified. A curing agent is also disclosed in column 5, lines 55-60. Further, the curable epoxy compound is an aromatic epoxy compound such as bisphenol A (see column 5, lines 35-36). The curable epoxy compound disclosed also includes an alicyclic epoxy compound which is an epoxy compound having an oxycyclohexane skeleton (see column 5, lines 35-42). The reference also discloses a method of making the liquid jet recording head which entails forming an ink flow path pattern form a soluble resin on an ink discharge pressure-generating element on a base plate, forming a coating resin layer on the soluble resin layer, removing of the soluble resin layer by elution, and forming a discharge opening through the coating resin layer (see column 2, lines 28-42). In addition, the reference discloses that the method of forming the discharge opening is accomplished by the well known technique of photolithography (see column 4, lines 28-32). Finally, it is well known in the art to form discharge openings by either oxygen plasma etching or excimer laser irradiation. In any event, Ohkuma et al. discloses in column 7, lines 29-30 that the discharge openings can be formed by either of these methods.

Ohkuma et al. discloses the claimed invention except for the functional group which reacts with the curable epoxy being a hydroxyl group, where the compound having a functional group has the structure of an aromatic or alkyl fluorinated diol. Field et al. teaches that it is known to use aromatic and alkyl diols which contain hydroxyl functional groups as compounds useful for polymerization reactions as set forth in column 2, lines 13-20. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use aromatic and alkyl diols which contain hydroxyl functional groups as the compound which reacted with the curable

epoxy of Ohkuma et al. as taught by Field et al. in order to provide a polymeric coating to the liquid jet recording head which is highly hydrophobic and therefore extends the life of the liquid jet recording head. Finally, although neither Ohkuma et al. or Field et al. teach the specific concentration (i.e., 5-50%) of the compound having a functional group and fluorocarbon moiety, both Ohkuma et al. (in Tables I and 2) and Field et al. (in Examples I and 11) teach various concentrations of this compound. In addition, in a polymerization reaction involving functional groups such as hydroxyl groups, the weight of the compound having functional groups is irrelevant, since the reactivity of the compound having functional groups is based on the stoichiometric ratio of the hydroxyl groups on the molecule, so that a molecule that has many hydroxyl groups can be used at a lower weight percent than a molecule having few hydroxyl groups. Therefore, in the absence of any showing of criticality for this claimed range, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize routine optimization when selecting the weight of the compound having a functional group of Ohkuma et al., for the purpose of optimizing the stoichiometric or molar ratios of that compound in the polymerization reaction.

Response to Arguments

3. Applicant's arguments filed 7/6/99 have been fully considered but they are not persuasive.

Applicant urges that the amount of compound having a functional group reactive to the curable epoxy compound and fluorocarbon moiety as recited in the claims is not taught by Ohkuma et al. or Field et al.. However, this difference was pointed out previously by the Office Action of Paper No. 14 (and is stated above). To summarize, it was recognized that neither Ohkuma et al. or Field et al. teaches the amount of compound having a functional group reactive to the curable epoxy compound and fluorocarbon moiety as recited in the claims (i.e., 5-50 %). However, the Office Action also points out why this argument is moot, since the reactivity of the compound having functional groups (such as hydroxyl groups), is based on the stoichiometric ratio of the hydroxyl groups on the molecule, so that a molecule that has many hydroxyl groups can be used at a lower weight percent, than a molecule having few hydroxyl groups. Further, the range of 5-50 % is a very large range, so that the criticality for this claimed range is questionable. Applicant can overcome this rejection by duplicating the conditions of the reactions taught in Ohkuma et al. and Field et al. to show that the range of 5-50 % is critical to Applicant's invention, and subsequently presenting these unexpected results in the form of a declaration or affidavit filed under 37 CFR 1.132.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

S from the mailing

date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Annick whose telephone number is (703) 308-6398. The examiner can normally be reached on Monday to Friday from 8:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. John Barlow, can be reached on (703) 308-1782. The fax phone number for this Group is (703) 308-5841.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1782.

Christina Annick

September 16, 1999

John Barlow
Supervisory Patent Examiner
Technology Center 2800